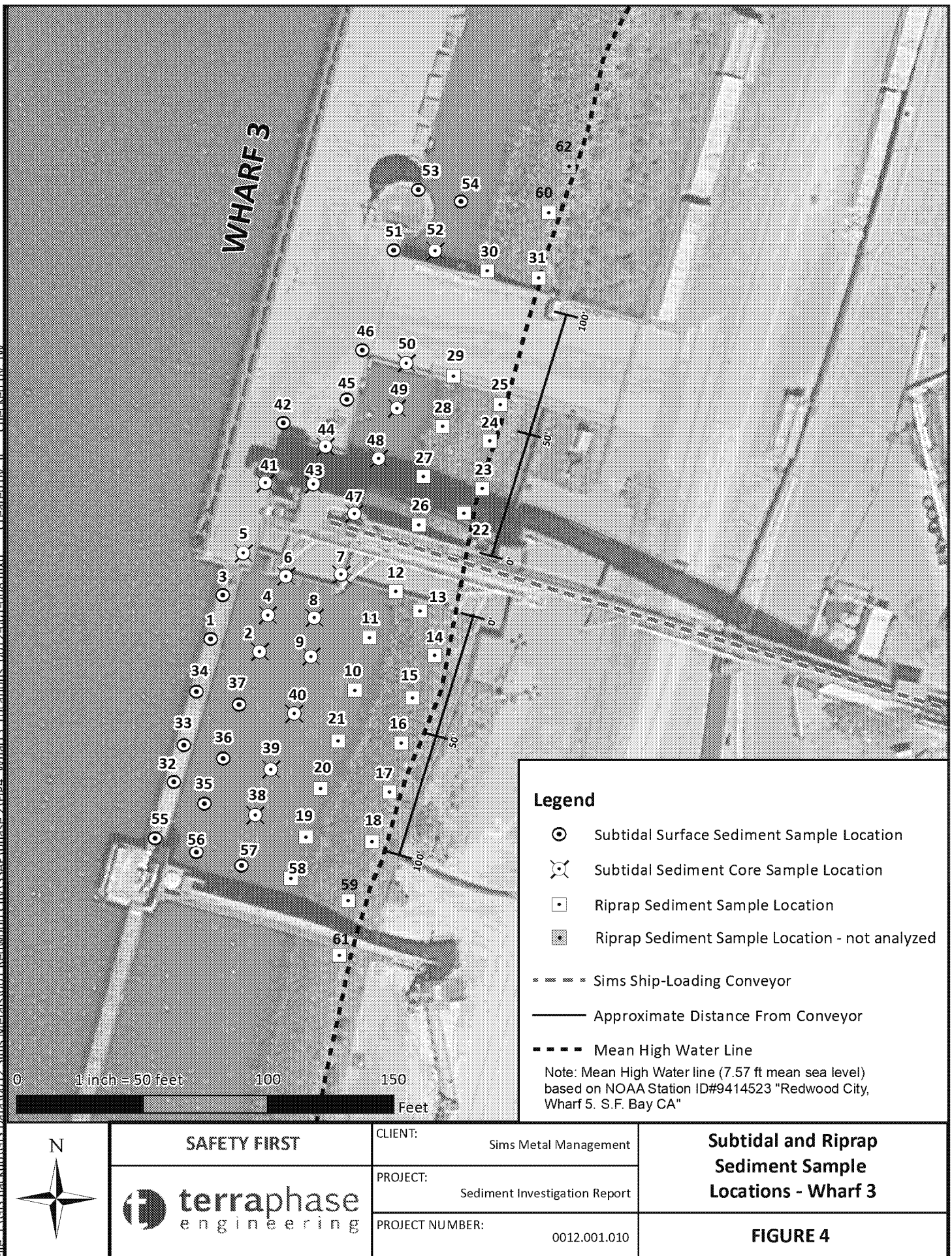
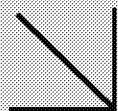


File: I:\GIS Backups\GIS Data\0012 Sims Metals\001 Redwood City\SSAP\phase 2\Fig4 Wharf3 Locations - 0012-001-008.mxd Created by: JJ Checked by: JW





Calscience

**WORK ORDER NUMBER: 17-06-2219***The difference is service*

AIR | SOIL | WATER | MARINE CHEMISTRY

Analytical Report For**Client:** Terraphase Engineering, Inc.**Client Project Name:** 0012.001.010

Attention: Jeff Wallace
 1404 Franklin Street
 Suite 600
 Oakland, CA 94612-3215

Approved for release on 07/14/2017 by:
 Carla Hollowell
 Project Manager

ResultLink ▶

Email your PM ▶

Eurofins Calscience, Inc. (Calscience) certifies that the test results provided in this report meet all NELAC requirements for parameters for which accreditation is required or available. Any exceptions to NELAC requirements are noted in the case narrative. The original report of subcontracted analyses, if any, is attached to this report. The results in this report are limited to the sample(s) tested and any reproduction thereof must be made in its entirety. The client or recipient of this report is specifically prohibited from making material changes to said report and, to the extent that such changes are made, Calscience is not responsible, legally or otherwise. The client or recipient agrees to indemnify Calscience for any defense to any litigation which may arise.

Contents

Client Project Name: 0012.001.010
 Work Order Number: 17-06-2219

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Work Order Narrative

Work Order: 17-06-2219

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Condition Upon Receipt:

Samples were received under Chain-of-Custody (COC) on 06/30/17. They were assigned to Work Order 17-06-2219.

Unless otherwise noted on the Sample Receiving forms all samples were received in good condition and within the recommended EPA temperature criteria for the methods noted on the COC. The COC and Sample Receiving Documents are integral elements of the analytical report and are presented at the back of the report.

Holding Times:

All samples were analyzed within prescribed holding times (HT) and/or in accordance with the Calscience Sample Acceptance Policy unless otherwise noted in the analytical report and/or comprehensive case narrative, if required.

Any parameter identified in 40CFR Part 136.3 Table II that is designated as "analyze immediately" with a holding time of ≤ 15 minutes (40CFR-136.3 Table II, footnote 4), is considered a "field" test and the reported results will be qualified as being received outside of the stated holding time unless received at the laboratory within 15 minutes of the collection time.

Quality Control:

All quality control parameters (QC) were within established control limits except where noted in the QC summary forms or described further within this report.

Subcontractor Information:

Unless otherwise noted below (or on the subcontract form), no samples were subcontracted.

Additional Comments:

Air - Sorbent-extracted air methods (EPA TO-4A, EPA TO-10, EPA TO-13A, EPA TO-17): Analytical results are converted from mass/sample basis to mass/volume basis using client-supplied air volumes.

Solid - Unless otherwise indicated, solid sample data is reported on a wet weight basis, not corrected for % moisture. All QC results are always reported on a wet weight basis.



Sample Summary

Client: Terraphase Engineering, Inc.	Work Order:	17-06-2219
1404 Franklin Street, Suite 600	Project Name:	0012.001.010
Oakland, CA 94612-3215	PO Number:	NW107979
	Date/Time Received:	06/30/17 10:30
	Number of Containers:	4

Attn: Jeff Wallace

Sample Identification	Lab Number	Collection Date and Time	Number of Containers	Matrix
W3-59-SED-0-0.5	17-06-2219-1	06/28/17 10:56	1	Sediment
W3-60-SED-0-0.5	17-06-2219-2	06/28/17 11:00	1	Sediment
W3-61-SED-0-0.5	17-06-2219-3	06/28/17 11:20	1	Sediment
W3-62-SED-0-0.5	17-06-2219-4	06/28/17 11:25	1	Sediment

Analytical Report

Terraphase Engineering, Inc.
1404 Franklin Street, Suite 600
Oakland, CA 94612-3215

Date Received: 06/30/17
Work Order: 17-06-2219
Preparation: N/A
Method: ASTM D-2216 (M)
Units: %

Project: 0012.001.010

Page 1 of 1

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
W3-59-SED-0-0.5	17-06-2219-1-AA	06/28/17 10:56	Sediment	N/A	06/30/17	06/30/17 19:00	H0630MOIB6

Comment(s): - Results were evaluated to the MDL (DL), concentrations \geq to the MDL (DL) but $<$ RL (LOQ), if found, are qualified with a "J" flag.

Parameter	Result	RL	MDL	DF	Qualifiers
Moisture	44	0.10	0.10	1.00	

W3-60-SED-0-0.5	17-06-2219-2-AA	06/28/17 11:00	Sediment	N/A	06/30/17	06/30/17 19:00	H0630MOIB6
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Comment(s): - Results were evaluated to the MDL (DL), concentrations \geq to the MDL (DL) but $<$ RL (LOQ), if found, are qualified with a "J" flag.

Parameter	Result	RL	MDL	DF	Qualifiers
Moisture	50	0.10	0.10	1.00	

Method Blank	099-05-014-7086	N/A	Solid	N/A	06/30/17	06/30/17 19:00	H0630MOIB6
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Comment(s): - Results were evaluated to the MDL (DL), concentrations \geq to the MDL (DL) but $<$ RL (LOQ), if found, are qualified with a "J" flag.

Parameter	Result	RL	MDL	DF	Qualifiers
Moisture	ND	0.10	0.10	1.00	

Return to Contents

RL: Reporting Limit. DF: Dilution Factor. MDL: Method Detection Limit.

Analytical Report

Terraphase Engineering, Inc.
1404 Franklin Street, Suite 600
Oakland, CA 94612-3215

Date Received: 06/30/17
Work Order: 17-06-2219
Preparation: EPA 3050B
Method: EPA 6010B
Units: mg/kg

Project: 0012.001.010

Page 1 of 3

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
W3-59-SED-0-0.5	17-06-2219-1-AA	06/28/17 10:56	Sediment	ICP 7300	06/30/17	07/05/17 12:28	170630L01

Comment(s):
- Results are reported on a dry weight basis.
- Results were evaluated to the MDL (DL), concentrations \geq to the MDL (DL) but $<$ RL (LOQ), if found, are qualified with a "J" flag.

Parameter	Result	RL	MDL	DF	Qualifiers
Antimony	ND	1.31	0.259	0.980	
Arsenic	14.2	1.31	0.451	0.980	
Barium	668	0.871	0.269	0.980	
Beryllium	0.444	0.435	0.238	0.980	
Cadmium	2.90	0.871	0.236	0.980	
Chromium	85.8	0.435	0.248	0.980	
Cobalt	33.3	0.435	0.258	0.980	
Copper	428	0.871	0.235	0.980	
Lead	278	0.871	0.229	0.980	
Molybdenum	5.61	0.435	0.230	0.980	
Nickel	124	0.435	0.252	0.980	
Selenium	0.560	1.31	0.522	0.980	J
Silver	0.923	0.435	0.149	0.980	
Thallium	ND	1.31	0.264	0.980	
Vanadium	67.2	0.435	0.246	0.980	
Zinc	2090	1.74	0.309	0.980	
Aluminum	20700	4.35	0.623	0.980	
Iron	49700	8.71	0.231	0.980	



 Return to Contents

RL: Reporting Limit. DF: Dilution Factor. MDL: Method Detection Limit.

Analytical Report

Terraphase Engineering, Inc.
1404 Franklin Street, Suite 600
Oakland, CA 94612-3215

Date Received: 06/30/17
Work Order: 17-06-2219
Preparation: EPA 3050B
Method: EPA 6010B
Units: mg/kg

Project: 0012.001.010

Page 2 of 3

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
W3-60-SED-0-0.5	17-06-2219-2-AA	06/28/17 11:00	Sediment	ICP 7300	06/30/17	07/05/17 12:30	170630L01

Comment(s): - Results are reported on a dry weight basis.

- Results were evaluated to the MDL (DL), concentrations \geq to the MDL (DL) but $<$ RL (LOQ), if found, are qualified with a "J" flag.

Parameter	Result	RL	MDL	DF	Qualifiers
Antimony	ND	1.49	0.296	1.00	
Arsenic	13.8	1.49	0.515	1.00	
Barium	172	0.994	0.307	1.00	
Beryllium	0.456	0.497	0.272	1.00	J
Cadmium	1.62	0.994	0.269	1.00	
Chromium	90.1	0.497	0.283	1.00	
Cobalt	19.7	0.497	0.294	1.00	
Copper	156	0.994	0.268	1.00	
Lead	105	0.994	0.262	1.00	
Molybdenum	2.00	0.497	0.262	1.00	
Nickel	103	0.497	0.288	1.00	
Selenium	ND	1.49	0.595	1.00	
Silver	0.485	0.497	0.170	1.00	J
Thallium	ND	1.49	0.301	1.00	
Vanadium	69.6	0.497	0.281	1.00	
Zinc	738	1.99	0.353	1.00	
Aluminum	22100	4.97	0.711	1.00	
Iron	42800	9.94	0.264	1.00	



 Return to Contents

RL: Reporting Limit. DF: Dilution Factor. MDL: Method Detection Limit.

Analytical Report

Terraphase Engineering, Inc.
 1404 Franklin Street, Suite 600
 Oakland, CA 94612-3215

Date Received: 06/30/17
 Work Order: 17-06-2219
 Preparation: EPA 3050B
 Method: EPA 6010B
 Units: mg/kg

Project: 0012.001.010

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Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
Method Blank	097-01-002-25045	N/A	Solid	ICP 7300	06/30/17	07/05/17 15:08	170630L01

Comment(s): - Results were evaluated to the MDL (DL), concentrations \geq to the MDL (DL) but $<$ RL (LOQ), if found, are qualified with a "J" flag.

Parameter	Result	RL	MDL	DF	Qualifiers
Antimony	ND	0.728	0.145	0.971	
Arsenic	ND	0.728	0.252	0.971	
Barium	ND	0.485	0.150	0.971	
Beryllium	ND	0.243	0.133	0.971	
Cadmium	ND	0.485	0.131	0.971	
Chromium	ND	0.243	0.138	0.971	
Cobalt	ND	0.243	0.144	0.971	
Copper	ND	0.485	0.131	0.971	
Lead	ND	0.485	0.128	0.971	
Molybdenum	ND	0.243	0.128	0.971	
Nickel	ND	0.243	0.141	0.971	
Selenium	ND	0.728	0.291	0.971	
Silver	ND	0.243	0.0832	0.971	
Thallium	ND	0.728	0.147	0.971	
Vanadium	ND	0.243	0.137	0.971	
Zinc	ND	0.971	0.172	0.971	
Aluminum	ND	2.43	0.347	0.971	
Iron	ND	4.85	0.129	0.971	



 Return to Contents

RL: Reporting Limit. DF: Dilution Factor. MDL: Method Detection Limit.

Analytical Report

Terraphase Engineering, Inc.
1404 Franklin Street, Suite 600
Oakland, CA 94612-3215

Date Received: 06/30/17
Work Order: 17-06-2219
Preparation: EPA 7471A Total
Method: EPA 7471A
Units: mg/kg

Project: 0012.001.010

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Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
W3-59-SED-0-0.5	17-06-2219-1-AA	06/28/17 10:56	Sediment	Mercury 08	06/30/17	07/03/17 16:14	170630L03

Comment(s):
- Results are reported on a dry weight basis.
- Results were evaluated to the MDL (DL), concentrations \geq to the MDL (DL) but $<$ RL (LOQ), if found, are qualified with a "J" flag.

Parameter	Result	RL	MDL	DF	Qualifiers
Mercury	0.676	0.146	0.0103	1.00	

W3-60-SED-0-0.5	17-06-2219-2-AA	06/28/17 11:00	Sediment	Mercury 08	06/30/17	07/03/17 16:21	170630L03
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Comment(s):
- Results are reported on a dry weight basis.
- Results were evaluated to the MDL (DL), concentrations \geq to the MDL (DL) but $<$ RL (LOQ), if found, are qualified with a "J" flag.

Parameter	Result	RL	MDL	DF	Qualifiers
Mercury	0.457	0.171	0.0121	1.00	

Method Blank	099-16-272-3116	N/A	Solid	Mercury 08	06/30/17	06/30/17 16:39	170630L03
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Comment(s):
- Results were evaluated to the MDL (DL), concentrations \geq to the MDL (DL) but $<$ RL (LOQ), if found, are qualified with a "J" flag.

Parameter	Result	RL	MDL	DF	Qualifiers
Mercury	ND	0.0806	0.00568	1.00	



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RL: Reporting Limit. DF: Dilution Factor. MDL: Method Detection Limit.

Analytical Report

Terraphase Engineering, Inc.
1404 Franklin Street, Suite 600
Oakland, CA 94612-3215

Date Received: 06/30/17
Work Order: 17-06-2219
Preparation: EPA 3541
Method: EPA 8082
Units: ug/kg

Project: 0012.001.010

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Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
W3-59-SED-0-0.5	17-06-2219-1-AA	06/28/17 10:56	Sediment	GC 66	07/08/17	07/12/17 16:33	170708L03

Comment(s):
- Results are reported on a dry weight basis.
- Results were evaluated to the MDL (DL), concentrations \geq to the MDL (DL) but $<$ RL (LOQ), if found, are qualified with a "J" flag.

Parameter	Result	RL	MDL	DF	Qualifiers
Aroclor-1016	ND	180	73	10.0	
Aroclor-1221	ND	180	150	10.0	
Aroclor-1232	ND	180	89	10.0	
Aroclor-1242	ND	180	90	10.0	
Aroclor-1248	960	180	110	10.0	
Aroclor-1254	770	180	110	10.0	
Aroclor-1260	ND	180	110	10.0	
Aroclor-1262	ND	180	120	10.0	
Total PCB Aroclors	1700	18	15	1.00	

Surrogate	Rec. (%)	Control Limits	Qualifiers
2,4,5,6-Tetrachloro-m-Xylene	89	25-145	
Decachlorobiphenyl	128	24-168	

W3-60-SED-0-0.5	17-06-2219-2-AA	06/28/17 11:00	Sediment	GC 66	07/08/17	07/12/17 17:27	170708L03
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Comment(s):
- Results are reported on a dry weight basis.
- Results were evaluated to the MDL (DL), concentrations \geq to the MDL (DL) but $<$ RL (LOQ), if found, are qualified with a "J" flag.

Parameter	Result	RL	MDL	DF	Qualifiers
Aroclor-1016	ND	98	41	5.00	
Aroclor-1221	ND	98	83	5.00	
Aroclor-1232	ND	98	50	5.00	
Aroclor-1242	ND	98	50	5.00	
Aroclor-1248	340	98	63	5.00	
Aroclor-1254	340	98	62	5.00	
Aroclor-1260	ND	98	62	5.00	
Aroclor-1262	ND	98	64	5.00	
Total PCB Aroclors	680	20	17	1.00	

Surrogate	Rec. (%)	Control Limits	Qualifiers
2,4,5,6-Tetrachloro-m-Xylene	80	25-145	
Decachlorobiphenyl	139	24-168	

RL: Reporting Limit. DF: Dilution Factor. MDL: Method Detection Limit.

Analytical Report

Terraphase Engineering, Inc.
 1404 Franklin Street, Suite 600
 Oakland, CA 94612-3215

Date Received: 06/30/17
 Work Order: 17-06-2219
 Preparation: EPA 3541
 Method: EPA 8082
 Units: ug/kg

Project: 0012.001.010


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Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
Method Blank	099-12-565-486	N/A	Solid	GC 66	07/08/17	07/12/17 14:31	170708L03

Comment(s): - Results were evaluated to the MDL (DL), concentrations \geq to the MDL (DL) but $<$ RL (LOQ), if found, are qualified with a "J" flag.

Parameter	Result	RL	MDL	DF	Qualifiers
Aroclor-1016	ND	10	4.2	1.00	
Aroclor-1221	ND	10	8.5	1.00	
Aroclor-1232	ND	10	5.0	1.00	
Aroclor-1242	ND	10	5.1	1.00	
Aroclor-1248	ND	10	6.4	1.00	
Aroclor-1254	ND	10	6.3	1.00	
Aroclor-1260	ND	10	6.3	1.00	
Aroclor-1262	ND	10	6.5	1.00	
Total PCB Aroclors	ND	10	8.5	1.00	

Surrogate	Rec. (%)	Control Limits	Qualifiers
2,4,5,6-Tetrachloro-m-Xylene	98	25-145	
Decachlorobiphenyl	114	24-168	



 Return to Contents

RL: Reporting Limit. DF: Dilution Factor. MDL: Method Detection Limit.



Calscience

Quality Control - Spike/Spike Duplicate

Terraphase Engineering, Inc.
1404 Franklin Street, Suite 600
Oakland, CA 94612-3215

Date Received: 06/30/17
Work Order: 17-06-2219
Preparation: EPA 3050B
Method: EPA 6010B

Project: 0012.001.010

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Quality Control Sample ID	Type	Matrix	Instrument	Date Prepared	Date Analyzed	MS/MSD Batch Number
W3-59-SED-0-0.5	Sample	Sediment	ICP 7300	06/30/17	07/05/17 12:28	170630S01A
W3-59-SED-0-0.5	Matrix Spike	Sediment	ICP 7300	06/30/17	07/05/17 12:29	170630S01A
W3-59-SED-0-0.5	Matrix Spike Duplicate	Sediment	ICP 7300	06/30/17	07/05/17 12:30	170630S01A

Parameter	Sample Conc.	Spike Added	MS Conc.	MS %Rec.	MSD Conc.	MSD %Rec.	%Rec. CL	RPD	RPD CL	Qualifiers
Antimony	ND	25.00	1.101	4	-0.7512	-3	50-115	0	0-20	3
Arsenic	7.972	25.00	32.84	99	30.21	89	75-125	8	0-20	
Barium	375.9	25.00	363.3	4X	363.9	4X	75-125	4X	0-20	Q
Beryllium	0.2498	25.00	24.95	99	25.09	99	75-125	1	0-20	
Cadmium	1.634	25.00	25.10	94	24.52	92	75-125	2	0-20	
Chromium	48.28	25.00	71.04	91	70.90	90	75-125	0	0-20	
Cobalt	18.75	25.00	42.27	94	41.17	90	75-125	3	0-20	
Copper	240.7	25.00	246.9	4X	245.1	4X	75-125	4X	0-20	Q
Lead	156.6	25.00	192.8	4X	188.1	4X	75-125	4X	0-20	Q
Molybdenum	3.156	25.00	24.16	84	23.43	81	75-125	3	0-20	
Nickel	69.78	25.00	88.21	74	86.09	65	75-125	2	0-20	3
Selenium	ND	25.00	24.10	96	23.11	92	75-125	4	0-20	
Silver	0.5196	12.50	13.88	107	13.80	106	75-125	1	0-20	
Thallium	ND	25.00	21.91	88	21.85	87	75-125	0	0-20	
Vanadium	37.81	25.00	60.02	89	60.13	89	75-125	0	0-20	
Zinc	1178	25.00	1120	4X	1125	4X	75-125	4X	0-20	Q
Aluminum	11630	25.00	11230	4X	11260	4X	75-125	4X	0-20	Q
Iron	27980	25.00	26890	4X	27270	4X	75-125	4X	0-20	Q

Return to Contents

RPD: Relative Percent Difference. CL: Control Limits

Quality Control - Spike/Spike Duplicate

Terraphase Engineering, Inc.
 1404 Franklin Street, Suite 600
 Oakland, CA 94612-3215

Date Received: 06/30/17
 Work Order: 17-06-2219
 Preparation: EPA 7471A Total
 Method: EPA 7471A

Project: 0012.001.010

Page 2 of 4

Quality Control Sample ID	Type	Matrix	Instrument	Date Prepared	Date Analyzed	MS/MSD Batch Number				
17-06-2173-1	Sample	Solid	Mercury 08	06/30/17	06/30/17 16:44	170630S03				
17-06-2173-1	Matrix Spike	Solid	Mercury 08	06/30/17	06/30/17 16:46	170630S03				
17-06-2173-1	Matrix Spike Duplicate	Solid	Mercury 08	06/30/17	06/30/17 16:48	170630S03				
Parameter	Sample Conc.	Spike Added	MS Conc.	MS %Rec.	MSD Conc.	MSD %Rec.	%Rec. CL	RPD	RPD CL	Qualifiers
Mercury	0.2380	0.8350	0.9657	87	0.9893	90	71-137	2	0-14	

Return to Contents

RPD: Relative Percent Difference. CL: Control Limits

Quality Control - Spike/Spike Duplicate

Terraphase Engineering, Inc.
 1404 Franklin Street, Suite 600
 Oakland, CA 94612-3215

Date Received: 06/30/17
 Work Order: 17-06-2219
 Preparation: EPA 7471A Total
 Method: EPA 7471A

Project: 0012.001.010

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Quality Control Sample ID	Type	Matrix	Instrument	Date Prepared	Date Analyzed	MS/MSD Batch Number				
W3-59-SED-0-0.5	Sample	Sediment	Mercury 08	06/30/17	07/03/17 16:14	170630S03A				
W3-59-SED-0-0.5	Matrix Spike	Sediment	Mercury 08	06/30/17	07/03/17 16:16	170630S03A				
W3-59-SED-0-0.5	Matrix Spike Duplicate	Sediment	Mercury 08	06/30/17	07/03/17 16:19	170630S03A				
Parameter	Sample Conc.	Spike Added	MS Conc.	MS %Rec.	MSD Conc.	MSD %Rec.	%Rec. CL	RPD	RPD CL	Qualifiers
Mercury	0.3805	0.8350	1.059	81	1.140	91	71-137	7	0-14	

Return to Contents

RPD: Relative Percent Difference. CL: Control Limits



Calscience

Quality Control - Spike/Spike Duplicate

Terraphase Engineering, Inc.
1404 Franklin Street, Suite 600
Oakland, CA 94612-3215

Date Received: 06/30/17
Work Order: 17-06-2219
Preparation: EPA 3541
Method: EPA 8082

Project: 0012.001.010

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Quality Control Sample ID	Type	Matrix	Instrument	Date Prepared	Date Analyzed	MS/MSD Batch Number				
W3-59-SED-0-0.5	Sample	Sediment	GC 66	07/08/17	07/12/17 16:33	170708S03				
W3-59-SED-0-0.5	Matrix Spike	Sediment	GC 66	07/08/17	07/12/17 18:03	170708S03				
W3-59-SED-0-0.5	Matrix Spike Duplicate	Sediment	GC 66	07/08/17	07/12/17 19:01	170708S03				
Parameter	Sample Conc.	Spike Added	MS Conc.	MS %Rec.	MSD Conc.	MSD %Rec.	%Rec. CL	RPD	RPD CL	Qualifiers
Aroclor-1016	ND	20.00	192.0	960	232.0	1160	50-135	19	0-25	3
Aroclor-1260	ND	20.00	202.0	1010	166.0	830	50-135	20	0-25	3

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RPD: Relative Percent Difference. CL: Control Limits

Quality Control - PDS/PDSD

Terraphase Engineering, Inc.
1404 Franklin Street, Suite 600
Oakland, CA 94612-3215

Date Received: 06/30/17
Work Order: 17-06-2219
Preparation: EPA 3050B
Method: EPA 6010B

Project: 0012.001.010

Page 1 of 1

Quality Control Sample ID	Type		Matrix		Instrument	Date Prepared	Date Analyzed	PDS/PDSD Batch Number		
W3-59-SED-0-0.5	Sample		Sediment		ICP 7300	06/30/17 00:00	07/05/17 12:28	170630S01A		
W3-59-SED-0-0.5	PDS		Sediment		ICP 7300	06/30/17 00:00	07/07/17 17:05	170630S01A		
W3-59-SED-0-0.5	PDSD		Sediment		ICP 7300	06/30/17 00:00	07/07/17 17:06	170630S01A		
Parameter	Sample Conc.	Spike Added	PDS Conc.	PDS %Rec.	PDSD Conc.	PDSD %Rec.	%Rec. CL	RPD	RPD CL	Qualifiers
Antimony	ND	25.00	26.10	104	24.59	98	75-125	6	0-20	
Arsenic	7.972	25.00	32.20	97	32.02	96	75-125	1	0-20	
Barium	375.9	25.00	370.3	4X	370.7	4X	75-125	4X	0-20	Q
Beryllium	0.2498	25.00	24.64	98	24.56	97	75-125	0	0-20	
Cadmium	1.634	25.00	26.01	97	25.72	96	75-125	1	0-20	
Chromium	48.28	25.00	72.36	96	72.33	96	75-125	0	0-20	
Cobalt	18.75	25.00	43.89	101	43.81	100	75-125	0	0-20	
Copper	240.7	25.00	260.7	4X	261.8	4X	75-125	4X	0-20	Q
Lead	156.6	25.00	183.6	4X	182.5	4X	75-125	4X	0-20	Q
Molybdenum	3.156	25.00	28.36	101	27.79	99	75-125	2	0-20	
Nickel	69.78	25.00	94.16	98	93.89	96	75-125	0	0-20	
Selenium	ND	25.00	26.03	104	25.35	101	75-125	3	0-20	
Silver	0.5196	12.50	10.39	79	10.34	79	75-125	0	0-20	
Thallium	ND	25.00	22.95	92	22.87	91	75-125	0	0-20	
Vanadium	37.81	25.00	62.71	100	62.59	99	75-125	0	0-20	
Zinc	1178	25.00	1185	4X	1187	4X	75-125	4X	0-20	Q
Aluminum	11630	25.00	11600	4X	11570	4X	75-125	4X	0-20	Q
Iron	27980	25.00	27980	4X	27280	4X	75-125	4X	0-20	Q



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RPD: Relative Percent Difference. CL: Control Limits

Quality Control - Sample Duplicate

Terraphase Engineering, Inc.
 1404 Franklin Street, Suite 600
 Oakland, CA 94612-3215

Date Received: 06/30/17
 Work Order: 17-06-2219
 Preparation: N/A
 Method: ASTM D-2216 (M)

Project: 0012.001.010

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Quality Control Sample ID	Type	Matrix	Instrument	Date Prepared	Date Analyzed	Duplicate Batch Number
W3-59-SED-0-0.5	Sample	Sediment	N/A	06/30/17 00:00	06/30/17 19:00	H0630MOID6
W3-59-SED-0-0.5	Sample Duplicate	Sediment	N/A	06/30/17 00:00	06/30/17 19:00	H0630MOID6

<u>Parameter</u>	<u>Sample Conc.</u>	<u>DUP Conc.</u>	<u>RPD</u>	<u>RPD CL</u>	<u>Qualifiers</u>
Moisture	43.70	43.70	0	0-10	

Quality Control - LCS

Terraphase Engineering, Inc.
1404 Franklin Street, Suite 600
Oakland, CA 94612-3215

Date Received: 06/30/17
Work Order: 17-06-2219
Preparation: EPA 3050B
Method: EPA 6010B

Project: 0012.001.010

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Quality Control Sample ID	Type	Matrix	Instrument	Date Prepared	Date Analyzed	LCS Batch Number
097-01-002-25045	LCS	Solid	ICP 7300	06/30/17	07/05/17 15:09	170630L01
Parameter	Spike Added	Conc. Recovered	LCS %Rec.	%Rec. CL	ME CL	Qualifiers
Antimony	25.00	25.22	101	80-120	73-127	
Arsenic	25.00	24.63	99	80-120	73-127	
Barium	25.00	27.95	112	80-120	73-127	
Beryllium	25.00	25.84	103	80-120	73-127	
Cadmium	25.00	26.23	105	80-120	73-127	
Chromium	25.00	26.60	106	80-120	73-127	
Cobalt	25.00	26.74	107	80-120	73-127	
Copper	25.00	26.66	107	80-120	73-127	
Lead	25.00	27.22	109	80-120	73-127	
Molybdenum	25.00	25.89	104	80-120	73-127	
Nickel	25.00	26.62	106	80-120	73-127	
Selenium	25.00	24.29	97	80-120	73-127	
Silver	12.50	14.12	113	80-120	73-127	
Thallium	25.00	26.09	104	80-120	73-127	
Vanadium	25.00	25.52	102	80-120	73-127	
Zinc	25.00	26.26	105	80-120	73-127	
Aluminum	25.00	26.28	105	80-120	73-127	
Iron	25.00	24.49	98	80-120	73-127	

Total number of LCS compounds: 18

Total number of ME compounds: 0

Total number of ME compounds allowed: 1

LCS ME CL validation result: Pass



Return to Contents

RPD: Relative Percent Difference. CL: Control Limits

Quality Control - LCS

Terraphase Engineering, Inc.
 1404 Franklin Street, Suite 600
 Oakland, CA 94612-3215

Date Received: 06/30/17
 Work Order: 17-06-2219
 Preparation: EPA 7471A Total
 Method: EPA 7471A

Project: 0012.001.010

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Quality Control Sample ID	Type	Matrix	Instrument	Date Prepared	Date Analyzed	LCS Batch Number
099-16-272-3116	LCS	Solid	Mercury 08	06/30/17	06/30/17 16:41	170630L03
Parameter	Spike Added		Conc. Recovered	LCS %Rec.	%Rec. CL	Qualifiers
Mercury	0.8350		0.9175	110	85-121	

Quality Control - LCS

Terraphase Engineering, Inc.
1404 Franklin Street, Suite 600
Oakland, CA 94612-3215

Date Received: 06/30/17
Work Order: 17-06-2219
Preparation: EPA 3541
Method: EPA 8082

Project: 0012.001.010

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Quality Control Sample ID	Type	Matrix	Instrument	Date Prepared	Date Analyzed	LCS Batch Number
099-12-565-486	LCS	Solid	GC 66	07/08/17	07/12/17 14:58	170708L03
<u>Parameter</u>		<u>Spike Added</u>	<u>Conc. Recovered</u>	<u>LCS %Rec.</u>	<u>%Rec. CL</u>	<u>Qualifiers</u>
Aroclor-1016		20.00	22.00	110	50-135	
Aroclor-1260		20.00	24.90	124	50-135	

Glossary of Terms and Qualifiers

Work Order: 17-06-2219

Page 1 of 1

<u>Qualifiers</u>	<u>Definition</u>
*	See applicable analysis comment.
<	Less than the indicated value.
>	Greater than the indicated value.
1	Surrogate compound recovery was out of control due to a required sample dilution. Therefore, the sample data was reported without further clarification.
2	Surrogate compound recovery was out of control due to matrix interference. The associated method blank surrogate spike compound was in control and, therefore, the sample data was reported without further clarification.
3	Recovery of the Matrix Spike (MS) or Matrix Spike Duplicate (MSD) compound was out of control due to suspected matrix interference. The associated LCS recovery was in control.
4	The MS/MSD RPD was out of control due to suspected matrix interference.
5	The PDS/PDSD or PES/PESD associated with this batch of samples was out of control due to suspected matrix interference.
6	Surrogate recovery below the acceptance limit.
7	Surrogate recovery above the acceptance limit.
B	Analyte was present in the associated method blank.
BU	Sample analyzed after holding time expired.
BV	Sample received after holding time expired.
CI	See case narrative.
E	Concentration exceeds the calibration range.
ET	Sample was extracted past end of recommended max. holding time.
HD	The chromatographic pattern was inconsistent with the profile of the reference fuel standard.
HDH	The sample chromatographic pattern for TPH matches the chromatographic pattern of the specified standard but heavier hydrocarbons were also present (or detected).
HDL	The sample chromatographic pattern for TPH matches the chromatographic pattern of the specified standard but lighter hydrocarbons were also present (or detected).
J	Analyte was detected at a concentration below the reporting limit and above the laboratory method detection limit. Reported value is estimated.
JA	Analyte positively identified but quantitation is an estimate.
ME	LCS Recovery Percentage is within Marginal Exceedance (ME) Control Limit range (+/- 4 SD from the mean).
ND	Parameter not detected at the indicated reporting limit.
Q	Spike recovery and RPD control limits do not apply resulting from the parameter concentration in the sample exceeding the spike concentration by a factor of four or greater.
SG	The sample extract was subjected to Silica Gel treatment prior to analysis.
X	% Recovery and/or RPD out-of-range.
Z	Analyte presence was not confirmed by second column or GC/MS analysis.
	Solid - Unless otherwise indicated, solid sample data is reported on a wet weight basis, not corrected for % moisture. All QC results are reported on a wet weight basis.
	Any parameter identified in 40CFR Part 136.3 Table II that is designated as "analyze immediately" with a holding time of <= 15 minutes (40CFR-136.3 Table II, footnote 4), is considered a "field" test and the reported results will be qualified as being received outside of the stated holding time unless received at the laboratory within 15 minutes of the collection time.
	A calculated total result (Example: Total Pesticides) is the summation of each component concentration and/or, if "J" flags are reported, estimated concentration. Component concentrations showing not detected (ND) are summed into the calculated total result as zero concentrations.



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2219

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SAMPLE RECEIPT CHECKLIST

COOLER 1 OF 1CLIENT: Terraphase Engineering

DATE: 06 / 30 / 2017

TEMPERATURE: (Criteria: 0.0°C – 6.0°C, not frozen except sediment/tissue)

Thermometer ID: SC3B (CF: 0.0°C); Temperature (w/o CF): 2.3 °C (w/ CF): 2.3 °C; ☒ Blank ☐ Sample☐ Sample(s) outside temperature criteria (PM/APM contacted by: _____)☐ Sample(s) outside temperature criteria but received on ice/chilled on same day of sampling☐ Sample(s) received at ambient temperature; placed on ice for transport by courierAmbient Temperature: ☐ Air ☐ FilterChecked by: LS

CUSTODY SEAL:

Cooler ☒ Present and Intact☐ Present but Not Intact☐ Not Present☐ N/AChecked by: LSSample(s) ☐ Present and Intact☐ Present but Not Intact☒ Not Present☐ N/AChecked by: SR

SAMPLE CONDITION:

Chain-of-Custody (COC) document(s) received with samples ☒ Yes ☐ No ☐ N/ACOC document(s) received complete ☒ Yes ☐ No ☐ N/A☐ Sampling date ☐ Sampling time ☐ Matrix ☐ Number of containers☐ No analysis requested ☐ Not relinquished ☐ No relinquished date ☐ No relinquished timeSampler's name indicated on COC ☒ Yes ☐ No ☐ N/ASample container label(s) consistent with COC ☒ Yes ☐ No ☐ N/ASample container(s) intact and in good condition ☒ Yes ☐ No ☐ N/AProper containers for analyses requested ☒ Yes ☐ No ☐ N/ASufficient volume/mass for analyses requested ☒ Yes ☐ No ☐ N/ASamples received within holding time ☒ Yes ☐ No ☐ N/A

Aqueous samples for certain analyses received within 15-minute holding time

☐ pH ☐ Residual Chlorine ☐ Dissolved Sulfide ☐ Dissolved Oxygen ☐ Yes ☐ No ☒ N/AProper preservation chemical(s) noted on COC and/or sample container ☐ Yes ☐ No ☒ N/A

Unpreserved aqueous sample(s) received for certain analyses

☐ Volatile Organics ☐ Total Metals ☐ Dissolved MetalsContainer(s) for certain analysis free of headspace ☐ Yes ☐ No ☒ N/A☐ Volatile Organics ☐ Dissolved Gases (RSK-175) ☐ Dissolved Oxygen (SM 4500)☐ Carbon Dioxide (SM 4500) ☐ Ferrous Iron (SM 3500) ☐ Hydrogen Sulfide (Hach)Tedlar™ bag(s) free of condensation ☐ Yes ☐ No ☒ N/A

CONTAINER TYPE:

(Trip Blank Lot Number: _____)

Aqueous: ☐ VOA ☐ VOA_h ☐ VOA_{na2} ☐ 100PJ ☐ 100PJ_{na2} ☐ 125AGB ☐ 125AGB_h ☐ 125AGB_p ☐ 125PB☐ 125PB_{znna} ☐ 250AGB ☐ 250CGB ☐ 250CGB_s ☐ 250PB ☐ 250PB_n ☐ 500AGB ☐ 500AGJ ☐ 500AGJ_s☐ 500PB ☐ 1AGB ☐ 1AGB_{na2} ☐ 1AGB_s ☐ 1PB ☐ 1PB_{na} ☐ _____ ☐ _____ ☐ _____ ☐ _____Solid: ☐ 4ozCGJ ☐ 8ozCGJ ☒ 16ozCGJ ☐ Sleeve (_____) ☐ EnCores® (_____) ☐ TerraCores® (_____) ☐ _____Air: ☐ Tedlar™ ☐ Canister ☐ Sorbent Tube ☐ PUF ☐ _____ Other Matrix (_____) ☐ _____ ☐ _____

Container: A = Amber, B = Bottle, C = Clear, E = Envelope, G = Glass, J = Jar, P = Plastic, and Z = Ziploc/Resealable Bag

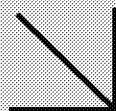
Preservative: b = buffered, f = filtered, h = HCl, n = HNO₃, na = NaOH, na₂ = Na₂S₂O₃, p = H₃PO₄, Labeled/Checked by: SRs = H₂SO₄, u = ultra-pure, x = Na₂SO₃+NaHSO₄.H₂O, znna = Zn (CH₃CO₂)₂ + NaOHReviewed by: 718



Calscience

Supplemental Report 1

Additional requested analyses are reported as a stand-alone report.

**WORK ORDER NUMBER: 17-06-2219***The difference is service*

AIR | SOIL | WATER | MARINE CHEMISTRY

Analytical Report For**Client:** Terraphase Engineering, Inc.**Client Project Name:** 0012.001.010

Attention: Jeff Wallace
 1404 Franklin Street
 Suite 600
 Oakland, CA 94612-3215

Approved for release on 08/01/2017 by:
 Carla Hollowell
 Project Manager

ResultLink ▶

Email your PM ▶

Eurofins Calscience, Inc. (Calscience) certifies that the test results provided in this report meet all NELAC requirements for parameters for which accreditation is required or available. Any exceptions to NELAC requirements are noted in the case narrative. The original report of subcontracted analyses, if any, is attached to this report. The results in this report are limited to the sample(s) tested and any reproduction thereof must be made in its entirety. The client or recipient of this report is specifically prohibited from making material changes to said report and, to the extent that such changes are made, Calscience is not responsible, legally or otherwise. The client or recipient agrees to indemnify Calscience for any defense to any litigation which may arise.

Contents

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 Work Order Number: 17-06-2219

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Work Order Narrative

Work Order: 17-06-2219Page 1 of 1

Condition Upon Receipt:

Samples were received under Chain-of-Custody (COC) on 06/30/17. They were assigned to Work Order 17-06-2219.

Unless otherwise noted on the Sample Receiving forms all samples were received in good condition and within the recommended EPA temperature criteria for the methods noted on the COC. The COC and Sample Receiving Documents are integral elements of the analytical report and are presented at the back of the report.

Holding Times:

All samples were analyzed within prescribed holding times (HT) and/or in accordance with the Calscience Sample Acceptance Policy unless otherwise noted in the analytical report and/or comprehensive case narrative, if required.

Any parameter identified in 40CFR Part 136.3 Table II that is designated as "analyze immediately" with a holding time of ≤ 15 minutes (40CFR-136.3 Table II, footnote 4), is considered a "field" test and the reported results will be qualified as being received outside of the stated holding time unless received at the laboratory within 15 minutes of the collection time.

Quality Control:

All quality control parameters (QC) were within established control limits except where noted in the QC summary forms or described further within this report.

Subcontractor Information:

Unless otherwise noted below (or on the subcontract form), no samples were subcontracted.

Additional Comments:

Air - Sorbent-extracted air methods (EPA TO-4A, EPA TO-10, EPA TO-13A, EPA TO-17): Analytical results are converted from mass/sample basis to mass/volume basis using client-supplied air volumes.

Solid - Unless otherwise indicated, solid sample data is reported on a wet weight basis, not corrected for % moisture. All QC results are always reported on a wet weight basis.

The sample was analyzed or extracted outside the EPA Method recommended solid sample holding time for Moisture Content and Mercury. However, the sample was frozen after collection (prior to holding time expiration) at -18°C , and remained frozen until the laboratory was ready to prepare the sample for analysis. Eurofins Calscience, Inc. follows SWAMP criteria and the Puget Sound Protocol (USEPA/PSWQAT, 1997, Table 2) for holding times in sediment samples, which states holding times may be extended up to six months to one year (two years for metals) if stored frozen at -18°C after collection. Therefore, the sample results have not been flagged as exceeding the EPA Method recommended holding time.

Sample Summary

Client: Terraphase Engineering, Inc.	Work Order:	17-06-2219
1404 Franklin Street, Suite 600	Project Name:	0012.001.010
Oakland, CA 94612-3215	PO Number:	NW107979
	Date/Time Received:	06/30/17 10:30
	Number of Containers:	4

Attn: Jeff Wallace

Sample Identification	Lab Number	Collection Date and Time	Number of Containers	Matrix
W3-61-SED-0-0.5	17-06-2219-3	06/28/17 11:20	1	Sediment

Detections Summary

Client: Terraphase Engineering, Inc.
 1404 Franklin Street, Suite 600
 Oakland, CA 94612-3215

Work Order: 17-06-2219
 Project Name: 0012.001.010
 Received: 06/30/17

Attn: Jeff Wallace

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Client SampleID

Analyte	Result	Qualifiers	RL	Units	Method	Extraction
W3-61-SED-0-0.5 (17-06-2219-3)						
Moisture	64		0.10	%	ASTM D-2216 (M)	N/A
Arsenic	15.6		2.14	mg/kg	EPA 6010B	EPA 3050B
Barium	133		1.42	mg/kg	EPA 6010B	EPA 3050B
Beryllium	0.704	J	0.390*	mg/kg	EPA 6010B	EPA 3050B
Cadmium	1.61		1.42	mg/kg	EPA 6010B	EPA 3050B
Chromium	110		0.712	mg/kg	EPA 6010B	EPA 3050B
Cobalt	24.2		0.712	mg/kg	EPA 6010B	EPA 3050B
Copper	103		1.42	mg/kg	EPA 6010B	EPA 3050B
Lead	77.9		1.42	mg/kg	EPA 6010B	EPA 3050B
Molybdenum	2.11		0.712	mg/kg	EPA 6010B	EPA 3050B
Nickel	118		0.712	mg/kg	EPA 6010B	EPA 3050B
Silver	0.445	J	0.244*	mg/kg	EPA 6010B	EPA 3050B
Vanadium	88.6		0.712	mg/kg	EPA 6010B	EPA 3050B
Zinc	593		2.85	mg/kg	EPA 6010B	EPA 3050B
Aluminum	31300		7.12	mg/kg	EPA 6010B	EPA 3050B
Iron	44600		14.2	mg/kg	EPA 6010B	EPA 3050B
Mercury	0.310		0.231	mg/kg	EPA 7471A	EPA 7471A Total
Aroclor-1248	280		28	ug/kg	EPA 8082	EPA 3541
Aroclor-1254	170		28	ug/kg	EPA 8082	EPA 3541
Total PCB Aroclors	450		28	ug/kg	EPA 8082	EPA 3541

Subcontracted analyses, if any, are not included in this summary.

* MDL is shown

Analytical Report

Terraphase Engineering, Inc.
 1404 Franklin Street, Suite 600
 Oakland, CA 94612-3215

Date Received: 06/30/17
 Work Order: 17-06-2219
 Preparation: N/A
 Method: ASTM D-2216 (M)
 Units: %

Project: 0012.001.010

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Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
W3-61-SED-0-0.5	17-06-2219-3-AA	06/28/17 11:20	Sediment	N/A	07/20/17	07/20/17 17:00	H0720MOIB6


Comment(s): - Results were evaluated to the MDL (DL), concentrations \geq to the MDL (DL) but $<$ RL (LOQ), if found, are qualified with a "J" flag.

<u>Parameter</u>	<u>Result</u>	<u>RL</u>	<u>MDL</u>	<u>DF</u>	<u>Qualifiers</u>
Moisture	64	0.10	0.10	1.00	

Method Blank	099-05-014-7117	N/A	Solid	N/A	07/20/17	07/20/17 17:00	H0720MOIB6
--------------	-----------------	-----	-------	-----	----------	-------------------	------------

Comment(s): - Results were evaluated to the MDL (DL), concentrations \geq to the MDL (DL) but $<$ RL (LOQ), if found, are qualified with a "J" flag.

<u>Parameter</u>	<u>Result</u>	<u>RL</u>	<u>MDL</u>	<u>DF</u>	<u>Qualifiers</u>
Moisture	ND	0.10	0.10	1.00	



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RL: Reporting Limit. DF: Dilution Factor. MDL: Method Detection Limit.

Analytical Report

Terraphase Engineering, Inc.
1404 Franklin Street, Suite 600
Oakland, CA 94612-3215

Date Received: 06/30/17
Work Order: 17-06-2219
Preparation: EPA 3050B
Method: EPA 6010B
Units: mg/kg

Project: 0012.001.010

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Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
W3-61-SED-0-0.5	17-06-2219-3-AA	06/28/17 11:20	Sediment	ICP 7300	07/26/17	07/27/17 11:40	170726L06

Comment(s):
- Results are reported on a dry weight basis.
- Results were evaluated to the MDL (DL), concentrations \geq to the MDL (DL) but $<$ RL (LOQ), if found, are qualified with a "J" flag.

Parameter	Result	RL	MDL	DF	Qualifiers
Antimony	ND	2.14	0.424	1.03	
Arsenic	15.6	2.14	0.738	1.03	
Barium	133	1.42	0.440	1.03	
Beryllium	0.704	0.712	0.390	1.03	J
Cadmium	1.61	1.42	0.386	1.03	
Chromium	110	0.712	0.405	1.03	
Cobalt	24.2	0.712	0.422	1.03	
Copper	103	1.42	0.384	1.03	
Lead	77.9	1.42	0.375	1.03	
Molybdenum	2.11	0.712	0.376	1.03	
Nickel	118	0.712	0.412	1.03	
Selenium	ND	2.14	0.853	1.03	
Silver	0.445	0.712	0.244	1.03	J
Thallium	ND	2.14	0.432	1.03	
Vanadium	88.6	0.712	0.402	1.03	
Zinc	593	2.85	0.506	1.03	
Aluminum	31300	7.12	1.02	1.03	
Iron	44600	14.2	0.379	1.03	



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RL: Reporting Limit. DF: Dilution Factor. MDL: Method Detection Limit.

Analytical Report

Terraphase Engineering, Inc.
 1404 Franklin Street, Suite 600
 Oakland, CA 94612-3215

Date Received: 06/30/17
 Work Order: 17-06-2219
 Preparation: EPA 3050B
 Method: EPA 6010B
 Units: mg/kg

Project: 0012.001.010

Page 2 of 2

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
Method Blank	097-01-002-25121	N/A	Solid	ICP 7300	07/26/17	07/27/17 14:55	170726L06

Comment(s): - Results were evaluated to the MDL (DL), concentrations \geq to the MDL (DL) but $<$ RL (LOQ), if found, are qualified with a "J" flag.

Parameter	Result	RL	MDL	DF	Qualifiers
Antimony	ND	0.735	0.146	0.980	
Arsenic	ND	0.735	0.254	0.980	
Barium	ND	0.490	0.151	0.980	
Beryllium	ND	0.245	0.134	0.980	
Cadmium	ND	0.490	0.133	0.980	
Chromium	ND	0.245	0.139	0.980	
Cobalt	ND	0.245	0.145	0.980	
Copper	ND	0.490	0.132	0.980	
Lead	ND	0.490	0.129	0.980	
Molybdenum	ND	0.245	0.129	0.980	
Nickel	ND	0.245	0.142	0.980	
Selenium	0.485	0.735	0.294	0.980	J
Silver	ND	0.245	0.0840	0.980	
Thallium	0.227	0.735	0.149	0.980	J
Vanadium	ND	0.245	0.138	0.980	
Zinc	ND	0.980	0.174	0.980	
Aluminum	ND	2.45	0.351	0.980	
Iron	ND	4.90	0.130	0.980	



 Return to Contents

RL: Reporting Limit. DF: Dilution Factor. MDL: Method Detection Limit.

Analytical Report

Terraphase Engineering, Inc.
1404 Franklin Street, Suite 600
Oakland, CA 94612-3215

Date Received: 06/30/17
Work Order: 17-06-2219
Preparation: EPA 7471A Total
Method: EPA 7471A
Units: mg/kg

Project: 0012.001.010

Page 1 of 1

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
W3-61-SED-0-0.5	17-06-2219-3-AA	06/28/17 11:20	Sediment	Mercury 07	07/27/17	07/28/17 11:19	170727L05

Comment(s):
- Results are reported on a dry weight basis.
- Results were evaluated to the MDL (DL), concentrations \geq to the MDL (DL) but $<$ RL (LOQ), if found, are qualified with a "J" flag.

Parameter	Result	RL	MDL	DF	Qualifiers
Mercury	0.310	0.231	0.0163	1.00	

Method Blank	099-16-272-3169	N/A	Solid	Mercury 07	07/27/17	07/28/17 10:49	170727L05
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Comment(s):
- Results were evaluated to the MDL (DL), concentrations \geq to the MDL (DL) but $<$ RL (LOQ), if found, are qualified with a "J" flag.

Parameter	Result	RL	MDL	DF	Qualifiers
Mercury	ND	0.0794	0.00559	1.00	



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RL: Reporting Limit. DF: Dilution Factor. MDL: Method Detection Limit.

Analytical Report

Terraphase Engineering, Inc.
1404 Franklin Street, Suite 600
Oakland, CA 94612-3215

Date Received: 06/30/17
Work Order: 17-06-2219
Preparation: EPA 3541
Method: EPA 8082
Units: ug/kg

Project: 0012.001.010

Page 1 of 1

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
W3-61-SED-0-0.5	17-06-2219-3-AA	06/28/17 11:20	Sediment	GC 66	07/08/17	07/28/17 15:07	170708L03

Comment(s): - Results are reported on a dry weight basis.
- Results were evaluated to the MDL (DL), concentrations \geq to the MDL (DL) but $<$ RL (LOQ), if found, are qualified with a "J" flag.

Parameter	Result	RL	MDL	DF	Qualifiers
Aroclor-1016	ND	28	11	1.00	
Aroclor-1221	ND	28	23	1.00	
Aroclor-1232	ND	28	14	1.00	
Aroclor-1242	ND	28	14	1.00	
Aroclor-1248	280	28	18	1.00	
Aroclor-1254	170	28	17	1.00	
Aroclor-1260	ND	28	17	1.00	
Aroclor-1262	ND	28	18	1.00	
Total PCB Aroclors	450	28	23	1.00	

Surrogate	Rec. (%)	Control Limits	Qualifiers
2,4,5,6-Tetrachloro-m-Xylene	90	25-145	
Decachlorobiphenyl	133	24-168	

Method Blank	099-12-565-486	N/A	Solid	GC 66	07/08/17	07/12/17 14:31	170708L03
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Comment(s): - Results were evaluated to the MDL (DL), concentrations \geq to the MDL (DL) but $<$ RL (LOQ), if found, are qualified with a "J" flag.

Parameter	Result	RL	MDL	DF	Qualifiers
Aroclor-1016	ND	10	4.2	1.00	
Aroclor-1221	ND	10	8.5	1.00	
Aroclor-1232	ND	10	5.0	1.00	
Aroclor-1242	ND	10	5.1	1.00	
Aroclor-1248	ND	10	6.4	1.00	
Aroclor-1254	ND	10	6.3	1.00	
Aroclor-1260	ND	10	6.3	1.00	
Aroclor-1262	ND	10	6.5	1.00	
Total PCB Aroclors	ND	10	8.5	1.00	

Surrogate	Rec. (%)	Control Limits	Qualifiers
2,4,5,6-Tetrachloro-m-Xylene	98	25-145	
Decachlorobiphenyl	114	24-168	

RL: Reporting Limit. DF: Dilution Factor. MDL: Method Detection Limit.

Quality Control - Spike/Spike Duplicate

Terraphase Engineering, Inc.
 1404 Franklin Street, Suite 600
 Oakland, CA 94612-3215

Date Received: 06/30/17
 Work Order: 17-06-2219
 Preparation: EPA 3050B
 Method: EPA 6010B

Project: 0012.001.010

Page 1 of 3

Quality Control Sample ID	Type	Matrix	Instrument	Date Prepared	Date Analyzed	MS/MSD Batch Number
W3-61-SED-0-0.5	Sample	Sediment	ICP 7300	07/26/17	07/27/17 11:40	170726S06
W3-61-SED-0-0.5	Matrix Spike	Sediment	ICP 7300	07/26/17	07/27/17 11:41	170726S06
W3-61-SED-0-0.5	Matrix Spike Duplicate	Sediment	ICP 7300	07/26/17	07/27/17 11:42	170726S06

Parameter	Sample Conc.	Spike Added	MS Conc.	MS %Rec.	MSD Conc.	MSD %Rec.	%Rec. CL	RPD	RPD CL	Qualifiers
Antimony	ND	25.00	8.413	34	8.530	34	50-115	1	0-20	3
Arsenic	5.602	25.00	29.32	95	28.76	93	75-125	2	0-20	
Barium	47.89	25.00	64.30	66	62.91	60	75-125	2	0-20	3
Beryllium	ND	25.00	25.62	102	24.90	100	75-125	3	0-20	
Cadmium	0.5805	25.00	26.13	102	25.40	99	75-125	3	0-20	
Chromium	39.71	25.00	58.08	73	56.80	68	75-125	2	0-20	3
Cobalt	8.698	25.00	31.36	91	32.28	94	75-125	3	0-20	
Copper	36.90	25.00	74.28	149	72.54	143	75-125	2	0-20	3
Lead	28.05	25.00	49.08	84	50.45	90	75-125	3	0-20	
Molybdenum	0.7599	25.00	23.79	92	24.68	96	75-125	4	0-20	
Nickel	42.41	25.00	60.50	72	58.80	66	75-125	3	0-20	3
Selenium	ND	25.00	24.38	98	24.87	99	75-125	2	0-20	
Silver	ND	12.50	13.92	111	13.56	108	75-125	3	0-20	
Thallium	ND	25.00	23.34	93	23.94	96	75-125	3	0-20	
Vanadium	31.91	25.00	51.00	76	49.86	72	75-125	2	0-20	3
Zinc	213.4	25.00	202.3	4X	195.3	4X	75-125	4X	0-20	Q
Aluminum	11280	25.00	8990	4X	9337	4X	75-125	4X	0-20	Q
Iron	16040	25.00	13140	4X	13580	4X	75-125	4X	0-20	Q

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RPD: Relative Percent Difference. CL: Control Limits

Quality Control - Spike/Spike Duplicate

Terraphase Engineering, Inc.
1404 Franklin Street, Suite 600
Oakland, CA 94612-3215

Date Received: 06/30/17
Work Order: 17-06-2219
Preparation: EPA 7471A Total
Method: EPA 7471A

Project: 0012.001.010

Page 2 of 3

Quality Control Sample ID	Type	Matrix	Instrument	Date Prepared	Date Analyzed	MS/MSD Batch Number				
W3-61-SED-0-0.5	Sample	Sediment	Mercury 07	07/27/17	07/28/17 11:19	170727S05A				
W3-61-SED-0-0.5	Matrix Spike	Sediment	Mercury 07	07/27/17	07/28/17 11:21	170727S05A				
W3-61-SED-0-0.5	Matrix Spike Duplicate	Sediment	Mercury 07	07/27/17	07/28/17 11:24	170727S05A				
Parameter	Sample Conc.	Spike Added	MS Conc.	MS %Rec.	MSD Conc.	MSD %Rec.	%Rec. CL	RPD	RPD CL	Qualifiers
Mercury	0.1117	0.8350	0.8556	89	0.8982	94	71-137	5	0-14	

RPD: Relative Percent Difference. CL: Control Limits

Quality Control - Spike/Spike Duplicate

Terraphase Engineering, Inc.
1404 Franklin Street, Suite 600
Oakland, CA 94612-3215

Date Received: 06/30/17
Work Order: 17-06-2219
Preparation: EPA 3541
Method: EPA 8082

Project: 0012.001.010

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Quality Control Sample ID	Type	Matrix	Instrument	Date Prepared	Date Analyzed	MS/MSD Batch Number
W3-59-SED-0-0.5	Sample	Sediment	GC 66	07/08/17	07/12/17 16:33	170708S03
W3-59-SED-0-0.5	Matrix Spike	Sediment	GC 66	07/08/17	07/12/17 18:03	170708S03
W3-59-SED-0-0.5	Matrix Spike Duplicate	Sediment	GC 66	07/08/17	07/12/17 19:01	170708S03

Parameter	Sample Conc.	Spike Added	MS Conc.	MS %Rec.	MSD Conc.	MSD %Rec.	%Rec. CL	RPD	RPD CL	Qualifiers
Aroclor-1016	ND	20.00	192.0	960	232.0	1160	50-135	19	0-25	3
Aroclor-1260	ND	20.00	202.0	1010	166.0	830	50-135	20	0-25	3

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RPD: Relative Percent Difference. CL: Control Limits

Quality Control - Sample Duplicate

Terraphase Engineering, Inc.
 1404 Franklin Street, Suite 600
 Oakland, CA 94612-3215

Date Received: 06/30/17
 Work Order: 17-06-2219
 Preparation: N/A
 Method: ASTM D-2216 (M)

Project: 0012.001.010

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Quality Control Sample ID	Type	Matrix	Instrument	Date Prepared	Date Analyzed	Duplicate Batch Number
W3-61-SED-0-0.5	Sample	Sediment	N/A	07/20/17 00:00	07/20/17 17:00	H0720MOID6
W3-61-SED-0-0.5	Sample Duplicate	Sediment	N/A	07/20/17 00:00	07/20/17 17:00	H0720MOID6

<u>Parameter</u>	<u>Sample Conc.</u>	<u>DUP Conc.</u>	<u>RPD</u>	<u>RPD CL</u>	<u>Qualifiers</u>
Moisture	64.00	64.10	0	0-10	

Quality Control - LCS

Terraphase Engineering, Inc.
1404 Franklin Street, Suite 600
Oakland, CA 94612-3215

Date Received: 06/30/17
Work Order: 17-06-2219
Preparation: EPA 3050B
Method: EPA 6010B

Project: 0012.001.010

Page 1 of 3

Quality Control Sample ID	Type	Matrix	Instrument	Date Prepared	Date Analyzed	LCS Batch Number
097-01-002-25121	LCS	Solid	ICP 7300	07/26/17	07/27/17 14:56	170726L06
Parameter	Spike Added	Conc. Recovered	LCS %Rec.	%Rec. CL	ME CL	Qualifiers
Antimony	25.00	24.31	97	80-120	73-127	
Arsenic	25.00	23.97	96	80-120	73-127	
Barium	25.00	25.36	101	80-120	73-127	
Beryllium	25.00	23.90	96	80-120	73-127	
Cadmium	25.00	24.18	97	80-120	73-127	
Chromium	25.00	24.18	97	80-120	73-127	
Cobalt	25.00	24.86	99	80-120	73-127	
Copper	25.00	24.24	97	80-120	73-127	
Lead	25.00	24.32	97	80-120	73-127	
Molybdenum	25.00	23.76	95	80-120	73-127	
Nickel	25.00	25.18	101	80-120	73-127	
Selenium	25.00	23.56	94	80-120	73-127	
Silver	12.50	12.61	101	80-120	73-127	
Thallium	25.00	25.13	101	80-120	73-127	
Vanadium	25.00	23.15	93	80-120	73-127	
Zinc	25.00	24.49	98	80-120	73-127	
Aluminum	25.00	25.01	100	80-120	73-127	
Iron	25.00	24.07	96	80-120	73-127	

Total number of LCS compounds: 18

Total number of ME compounds: 0

Total number of ME compounds allowed: 1

LCS ME CL validation result: Pass

Return to Contents

RPD: Relative Percent Difference. CL: Control Limits

Quality Control - LCS

Terraphase Engineering, Inc.
1404 Franklin Street, Suite 600
Oakland, CA 94612-3215

Date Received: 06/30/17
Work Order: 17-06-2219
Preparation: EPA 7471A Total
Method: EPA 7471A

Project: 0012.001.010

Page 2 of 3

Quality Control Sample ID	Type	Matrix	Instrument	Date Prepared	Date Analyzed	LCS Batch Number
099-16-272-3169	LCS	Solid	Mercury 07	07/27/17	07/28/17 10:51	170727L05
Parameter	Spike Added		Conc. Recovered	LCS %Rec.	%Rec. CL	Qualifiers
Mercury	0.8350		0.8292	99	85-121	

Quality Control - LCS

Terraphase Engineering, Inc.
1404 Franklin Street, Suite 600
Oakland, CA 94612-3215

Date Received: 06/30/17
Work Order: 17-06-2219
Preparation: EPA 3541
Method: EPA 8082

Project: 0012.001.010

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Quality Control Sample ID	Type	Matrix	Instrument	Date Prepared	Date Analyzed	LCS Batch Number
099-12-565-486	LCS	Solid	GC 66	07/08/17	07/12/17 14:58	170708L03
<u>Parameter</u>		<u>Spike Added</u>	<u>Conc. Recovered</u>	<u>LCS %Rec.</u>	<u>%Rec. CL</u>	<u>Qualifiers</u>
Aroclor-1016		20.00	22.00	110	50-135	
Aroclor-1260		20.00	24.90	124	50-135	

Glossary of Terms and Qualifiers

Work Order: 17-06-2219

Page 1 of 1

<u>Qualifiers</u>	<u>Definition</u>
*	See applicable analysis comment.
<	Less than the indicated value.
>	Greater than the indicated value.
1	Surrogate compound recovery was out of control due to a required sample dilution. Therefore, the sample data was reported without further clarification.
2	Surrogate compound recovery was out of control due to matrix interference. The associated method blank surrogate spike compound was in control and, therefore, the sample data was reported without further clarification.
3	Recovery of the Matrix Spike (MS) or Matrix Spike Duplicate (MSD) compound was out of control due to suspected matrix interference. The associated LCS recovery was in control.
4	The MS/MSD RPD was out of control due to suspected matrix interference.
5	The PDS/PDSD or PES/PESD associated with this batch of samples was out of control due to suspected matrix interference.
6	Surrogate recovery below the acceptance limit.
7	Surrogate recovery above the acceptance limit.
B	Analyte was present in the associated method blank.
BU	Sample analyzed after holding time expired.
BV	Sample received after holding time expired.
CI	See case narrative.
E	Concentration exceeds the calibration range.
ET	Sample was extracted past end of recommended max. holding time.
HD	The chromatographic pattern was inconsistent with the profile of the reference fuel standard.
HDH	The sample chromatographic pattern for TPH matches the chromatographic pattern of the specified standard but heavier hydrocarbons were also present (or detected).
HDL	The sample chromatographic pattern for TPH matches the chromatographic pattern of the specified standard but lighter hydrocarbons were also present (or detected).
J	Analyte was detected at a concentration below the reporting limit and above the laboratory method detection limit. Reported value is estimated.
JA	Analyte positively identified but quantitation is an estimate.
ME	LCS Recovery Percentage is within Marginal Exceedance (ME) Control Limit range (+/- 4 SD from the mean).
ND	Parameter not detected at the indicated reporting limit.
Q	Spike recovery and RPD control limits do not apply resulting from the parameter concentration in the sample exceeding the spike concentration by a factor of four or greater.
SG	The sample extract was subjected to Silica Gel treatment prior to analysis.
X	% Recovery and/or RPD out-of-range.
Z	Analyte presence was not confirmed by second column or GC/MS analysis.
	Solid - Unless otherwise indicated, solid sample data is reported on a wet weight basis, not corrected for % moisture. All QC results are reported on a wet weight basis.
	Any parameter identified in 40CFR Part 136.3 Table II that is designated as "analyze immediately" with a holding time of <= 15 minutes (40CFR-136.3 Table II, footnote 4), is considered a "field" test and the reported results will be qualified as being received outside of the stated holding time unless received at the laboratory within 15 minutes of the collection time.
	A calculated total result (Example: Total Pesticides) is the summation of each component concentration and/or, if "J" flags are reported, estimated concentration. Component concentrations showing not detected (ND) are summed into the calculated total result as zero concentrations.



Calscience

7440 Lincoln Way, Garden Grove, CA 92641-1427 • (714) 895-5494
For courier service / sample drop off information, contact us26_sales@eurofins.com or call us.

LABORATORY CLIENT:

Terraphase Engineering

ADDRESS: 1404 Franklin St Suite 600

CITY: Oakland STATE: CA ZIP: 94612

TEL: 510.645.1850 E-MAIL: jeff.wallace@terrphase.com

TURNAROUND TIME (Rush surcharges may apply to any TAT not "STANDARD"):

☐ SAME DAY ☐ 24 HR ☐ 48 HR ☐ 72 HR ☐ 5 DAYS ☒ STANDARD

LOG CODE:

GLOBAL ID:

☐ COELT EDF

SPECIAL INSTRUCTIONS:

LAB USE ONLY	SAMPLE ID	SAMPLING		MATRIX	NO. OF CONT.
		DATE	TIME		
1	W3-59-SED-0-0.5	6/28/17	1030	sed	1
2	W3-60-SED-0-0.5	6/28/17	1100	sed	1
3	W3-61-SED-0-0.5	6/28/17	1120	sed	1
4	W3-62-SED-0-0.5	6/28/17	1125	sed	1

Unpreserved
Preserved
Field Filtered

PCBs (8082)
T22 Metals ☒ 6010/747X ☐ 6020/747X
Iron
Aluminum
Moisture Content
Hold *Extract & Hold for PCBs*

Please check box or fill in blank as needed.

REQUESTED ANALYSES

CLIENT PROJECT NAME / NUMBER:

0012.001.010

PROJECT CONTACT:

Jeff Wallace

P.O. NO.:

SAMPLER(S): (PRINT)

Kristen Stroud
Hugo Ortigoza

WO # / LAB USE ONLY

17-06-2219

DATE: 6/28/2017

PAGE: 1 OF 1

CHAIN OF CUSTODY RECORD

Relinquished by: (Signature) *[Signature]*
Relinquished by: (Signature) *[Signature]*
Relinquished by: (Signature) *[Signature]*

Received by: (Signature/Affiliation) *[Signature] TFI*
Received by: (Signature/Affiliation) *[Signature] GCI*
Received by: (Signature/Affiliation) *[Signature]*

Date: 6/28/17 Time: 1500

Date: 6/29/17 Time: 0955

Date: 6/30/17 Time: 1030



800-322-5555 www.gso.com

2219

Ship From
CAL SCIENCE- CONCORD
ALAN KEMP
5063 COMMERCIAL CIRCLE
#H
CONCORD, CA 94520

Tracking #: 536691118

PDS



Ship To
CEL
SAMPLE RECEIVING
7440 LINCOLN WAY
GARDEN GROVE, CA 92841

ORC
GARDEN GROVE

A

COD: \$0.00
Weight: 0 lb(s)
Reference:
MONTEZUMA WETLANDS, TERRAPHASE, ARCADIS
Delivery Instructions:

D92845A



68865568

Signature Type: REQUIRED

Print Date: 6/29/2017 2:57 PM

LABEL INSTRUCTIONS:

Do not copy or reprint this label for additional shipments - each package must have a unique barcode.

Use the "Print Label" button on this page to print the shipping label on a laser or inkjet printer. Securely attach this label to your package, do not cover the barcode.

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SAMPLE RECEIPT CHECKLIST

COOLER 1 OF 1CLIENT: Terraphase Engineering

DATE: 06 / 30 / 2017

TEMPERATURE: (Criteria: 0.0°C – 6.0°C, not frozen except sediment/tissue)

Thermometer ID: SC3B (CF: 0.0°C); Temperature (w/o CF): 2.3 °C (w/ CF): 2.3 °C; ☒ Blank ☐ Sample☐ Sample(s) outside temperature criteria (PM/APM contacted by: _____)☐ Sample(s) outside temperature criteria but received on ice/chilled on same day of sampling☐ Sample(s) received at ambient temperature; placed on ice for transport by courierAmbient Temperature: ☐ Air ☐ FilterChecked by: LS

CUSTODY SEAL:

Cooler ☒ Present and Intact☐ Present but Not Intact☐ Not Present☐ N/AChecked by: LSSample(s) ☐ Present and Intact☐ Present but Not Intact☒ Not Present☐ N/AChecked by: SR

SAMPLE CONDITION:

Chain-of-Custody (COC) document(s) received with samples ☒ Yes ☐ No ☐ N/ACOC document(s) received complete ☒ Yes ☐ No ☐ N/A☐ Sampling date ☐ Sampling time ☐ Matrix ☐ Number of containers☐ No analysis requested ☐ Not relinquished ☐ No relinquished date ☐ No relinquished timeSampler's name indicated on COC ☒ Yes ☐ No ☐ N/ASample container label(s) consistent with COC ☒ Yes ☐ No ☐ N/ASample container(s) intact and in good condition ☒ Yes ☐ No ☐ N/AProper containers for analyses requested ☒ Yes ☐ No ☐ N/ASufficient volume/mass for analyses requested ☒ Yes ☐ No ☐ N/ASamples received within holding time ☒ Yes ☐ No ☐ N/A

Aqueous samples for certain analyses received within 15-minute holding time

☐ pH ☐ Residual Chlorine ☐ Dissolved Sulfide ☐ Dissolved Oxygen ☐ Yes ☐ No ☒ N/AProper preservation chemical(s) noted on COC and/or sample container ☐ Yes ☐ No ☒ N/A

Unpreserved aqueous sample(s) received for certain analyses

☐ Volatile Organics ☐ Total Metals ☐ Dissolved MetalsContainer(s) for certain analysis free of headspace ☐ Yes ☐ No ☒ N/A☐ Volatile Organics ☐ Dissolved Gases (RSK-175) ☐ Dissolved Oxygen (SM 4500)☐ Carbon Dioxide (SM 4500) ☐ Ferrous Iron (SM 3500) ☐ Hydrogen Sulfide (Hach)Tedlar™ bag(s) free of condensation ☐ Yes ☐ No ☒ N/A

CONTAINER TYPE:

(Trip Blank Lot Number: _____)

Aqueous: ☐ VOA ☐ VOA_h ☐ VOA_{na2} ☐ 100PJ ☐ 100PJ_{na2} ☐ 125AGB ☐ 125AGB_h ☐ 125AGB_p ☐ 125PB☐ 125PB_{znna} ☐ 250AGB ☐ 250CGB ☐ 250CGB_s ☐ 250PB ☐ 250PB_n ☐ 500AGB ☐ 500AGJ ☐ 500AGJ_s☐ 500PB ☐ 1AGB ☐ 1AGB_{na2} ☐ 1AGB_s ☐ 1PB ☐ 1PB_{na} ☐ _____ ☐ _____ ☐ _____ ☐ _____Solid: ☐ 4ozCGJ ☐ 8ozCGJ ☒ 16ozCGJ ☐ Sleeve (_____) ☐ EnCores® (_____) ☐ TerraCores® (_____) ☐ _____Air: ☐ Tedlar™ ☐ Canister ☐ Sorbent Tube ☐ PUF ☐ _____ Other Matrix (_____) : ☐ _____ ☐ _____

Container: A = Amber, B = Bottle, C = Clear, E = Envelope, G = Glass, J = Jar, P = Plastic, and Z = Ziploc/Resealable Bag

Preservative: b = buffered, f = filtered, h = HCl, n = HNO₃, na = NaOH, na₂ = Na₂S₂O₃, p = H₃PO₄, Labeled/Checked by: SRs = H₂SO₄, u = ultra-pure, x = Na₂SO₃+NaHSO₄·H₂O, znna = Zn (CH₃CO₂)₂ + NaOHReviewed by: 718